

connection with a general consideration of this problem and certain specific details.

It was the sense of the committee that geochemical investigation should have appropriate representation in the American Section of the proposed International Geophysical Union.

It was recommended to postpone the question of the formation of an American Geophysical Society until after the Brussels meeting.

HARRY O. WOOD,  
*Acting Secretary*

(*To be concluded*)

### SPECIAL ARTICLES

#### BACTERIUM SOLANACEARUM IN BEANS

IN June, 1919, some badly diseased bush beans were received from Lynn Haven, Florida. The leaves were wilted and more or less brown. Often the petioles also were brown and wilted to their base. The roots were brown and the epidermis somewhat decayed in places. The woody parts of the plants, both stems and roots, had dark stained vascular bundles. Cross sections examined microscopically showed from 50 to 100 per cent. of the vessels to be full of bacteria and no fungi were visible. As the discoloration of the leaves was generally uniform, with no lesions apparent while the roots showed lesions and contained bacteria in great numbers the supposition was that the disease must be due to the bacteria and that they must have entered through the root system. The loss in the Florida field was about 20 per cent. of the beans planted.

Agar-poured plates gave pure cultures of a white bacterial organism having all the characteristics of *Bacterium solanacearum*.

Cultural work in other media and needle-prick inoculations made with sub-cultures of colonies taken from the poured plates confirmed this diagnosis.

A number of different legumes were inoculated by pricking the bacteria into the stems. Of beans, Waxbush, Red Valentine and Refugee proved very susceptible. These plants began to wilt two days after inocula-

tion and a number were entirely wilted and fallen over in seven days. In addition to those already mentioned, good infections were secured in: Lima beans (Fordhood variety), Pinto beans (a brown speckled variety) and Great Northern (a white Navy bean).

Inoculated in peas this parasite acts more slowly than in beans, but is not without pathogenic properties at least on some varieties. Following stem inoculation by needle pricks there is a slow drying and shriveling of the leaves but not a sudden wilt. The plants become stunted. Cross sections of the stems show bundles discolored and containing bacteria though in less abundance than in infected beans, tobaccoes, or tomatoes. Telephone, Little Marvel and Mammoth Luscious Sugar were the varieties of peas that became infected. The organism has been reisolated from both beans and peas, and proved to have the same characters and infectiousness (tested on tobacco and beans), as the original culture.

The organism was also found to be infectious to soy beans (variety Ito San) and to cowpeas (variety Black Cow).

Tobacco and tomato plants used for control showed typical *Bacterium solanacearum* infections.

So far as known this is the first time this disease has been observed in beans, peas, soy beans or cowpeas, although known to occur in peanuts, in *Mucuna* sp., and in some other legumes. Fortunately beans appear to be very susceptible only in early stages of growth.

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